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NOMINATION—COMMERCE

HEARING

BEFORE THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

SECOND SESSION

ON

NOMINATIONS

MARCH 26, 1990

ROBERT M. WHITE, TO BE UNDER SECRETARY OF COMMERCE FOR TECHNOLOGY, DEPARTMENT OF COMMERCE

Printed for the use of the
Committee on Commerce, Science, and Transportation

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NOMINATION—COMMERCE

MONDAY, MARCH 26, 1990

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The committee met, pursuant to notice, at 10:02 a.m. in room SR-253, Russell Senate Office Building, Hon. Ernest F. Hollings (Chariman of the Committee) presiding.

Staff members assigned to this hearing: Pat Windham and Becky Kojm, professional staff members; and Ruth Johnson, minority professional staff member.

OPENING STATEMENT BY THE CHAIRMAN

The CHAIRMAN. Good morning. The committee will please come to order.

We want to welcome Dr. Robert M. White to be the first Under Secretary of Commerce for Technology. Dr. White has been nominated to this post at a critical time in our nation's history. After 40 years of struggle, the United States has won the Cold War. It is a great victory, one we and our allies should be proud of, but just as we have won the Cold War we look and realize we are losing an economic war, the global contest to see which nations will lead the world and in new technologies, key industries, jobs, wealth, and security.

The United States is losing that contest. A May 1989 report by the Department of Defense concluded that Japan is significantly ahead of the United States in six critical technologies: microelectronic circuits, gallium arsenide, robotics, optics, superconductivity, biotechnology, processing materials.

A 1988 white paper by Japan's Ministry of International Trade and Industry found Japan to have a superior technology development capability in ten of 16 critical technologies and equal to the United States in five of the remaining six categories.

Japan continues to make huge government-organized research investments in areas such as high definition displays, semiconductors, and the like. Europe's investment in high technology research projects totals some $16 billion over the next five years, half of that from governments.

To meet this global challenge, the Executive Branch now has the authority and mandate to work with United States industry to restore America's technological strength. In particular, the Commerce Department received broad new authority in the 1988 Trade Act to ensure the application of new technologies to improve the competitiveness of U.S. industry.

So far the Bush Administration has taken some steps, most notably in requesting fiscal year 1991 funds for important new programs at the National Institute of Standards and Technology, including the manufacturing technology centers and the Advanced Technology Program. But the amount of money is still not enough.

NIST is the only Federal research agency whose primary mission is to assist industry. Yet its programs are not fully funded. Both Congress and the President need to re-examine our science and technology priorities.

It is also time for both Congress and the Administration to state unequivocally that this nation must maintain industrial strength here at home, that we cannot afford to see all of our major industries destroyed, and that to continue with business as usual would turn us into a second-rate economy.

These are the issues, great national issues, that we have in mind as we welcome you, Dr. White, this morning. You are more than qualified to speak on these matters.

Dr. White holds a Ph.D. in physics, has served as a university professor, and comes to this position after a long, distinguished record as a senior technical manager for Xerox, Control Data Corporation, and the Microelectronics and Computer Technology Corporation. He is a member of the National Academy of Engineering.

To present you this morning, we are delighted to have our distinguished colleague, the Senator from Minnesota, Senator Durenberger.

We recognize you, sir.

STATEMENT OF HON. DAVE DURENBERGER, U.S. SENATOR FROM MINNESOTA

Senator DURENBERGER. Mr. Chairman, it is an honor to be here, and I am glad to be here to listen to you make that presentation. I could not think of a better groundwork for introducing Bob White than the statement you just made.

I think it is apparent to us now that the key to the world's economic expansion and the key to the role that the United States is going to play in that expansion lies in continuing to develop new technologies. It is especially important that we place qualified, knowledgeable people in key government positions that will help us foster those policies that give us those new technologies.

So I am particularly proud that the President of the United States has chosen a Minnesotan, a fellow Minnesotan of mine, Robert White, for the position of Under Secretary of Commerce for Technology, and he has my strongest endorsement for this position.

I did not know he was interested until we were riding our captive airline back and forth one day——

The CHAIRMAN. The airline is a captive or you?

Senator DURENBERGER. Well, we are a captive of the airline maybe, for all I know at this stage. You know the answer to that, Mr. Chairman, much better than I.

But anyway, I found out his interest in public policy at that time, and I think it was not that he had dropped resumes around the place, but that somebody was smart enough in the place to go looking for him.

I am also very pleased that this hearing was scheduled so quickly, and that is a compliment to you and your staff and the members of this committee, so quickly after Robert White was nominated for this position. Of course, I would urge you to continue to move positively and quickly on this nomination.

As you indicated, Mr. Chairman, Robert White has 25 years of experience in research and development as a scientist, as an educator, and as an executive. You pointed out the impressive nature of his educational credentials: a B.S. from MIT, a Ph.D. in Physics from Stanford, a Visiting Scientist at Osaka University in Japan, an NSF Postdoctoral Fellow at both the University of California at Berkeley and at Cavendish Laboratory of Cambridge, England.

What is impressive is that throughout his professional career Robert White has remained very active in academic circles as well, taught or been an advisor at several universities, including institutions in Brazil, France, West Germany, and California.

Since 1986 he has served as an adjunct professor at the University of Minnesota, has published several books and articles on physics issues. He has also proved himself a sound manager with some of America's most proven high technology firms: Xerox for 20 years, Minnesota's own Control Data Corporation, and MCC.

Since 1987 he has served on the State of Minnesota's Committee on Science and Technology Research and Development, to which he was appointed by Minnesota's Democratic Governor Rudy Perpich.

Robert White, Mr. Chairman, is well qualified academically and professionally and by character to this position. He is also a very personable and very enjoyable person with a very charming family. I had the privilege, as I said, of working with his daughter Victoria this past summer when she served as an intern on my staff.

So I look forward to your positive review of his credentials and trust you will find him as qualified as we in Minnesota have always found him for this position.

The CHAIRMAN. We thank you very much, Senator Durenberger.

You compliment us on being, of course, expeditious. The truth of the matter is you and I and the Commerce Department, including Secretary Mosbacher, have been anxious to fill this now for a year and a half. And I ordinarily would be disgruntled except for the fact that we do have Dr. White.

I think he is outstanding, and hope that he can get in step with us here in the Congress who have been really yearning to get Commerce into commerce and the United States into the economic competition. We are going to get into some of these things with Dr. White.

You are welcome to sit with the committee if you would like to, or if you have some other matters, like we always have, late for another meeting, I understand. But the committee does appreciate your presentation here this morning.

Senator DURENBERGER. Mr. Chairman, I am going to look for Will Steger right now. They finally got back from Antarctica. That is why I am sporting this button here today.

The CHAIRMAN. From Antarctica?

Senator DURENBERGER. From Antarctica.

The CHAIRMAN. Have you been there?

Senator DURENBERGER. No, I have not. But if you have, I would love to have you come around this afternoon about 5:30 to 6:00 at the LBJ Room or across the hall in 385 Russell. And it is just about what you are talking about. A young man from Minnesota, a doctor from France whom he met skiing to the North Pole, Kizu Funatsu, who is a 33 year old from Osaka, Japan, Quin Dahe, who is a scientist from China, Victor Boyarski from Leningrad, an absolutely amazing glaciologist, and a young man named Geoff Somers from the north country in England spent 211 days going 3,700 some miles.

I thought it was interesting, when they reached the South Pole—you would know; again, you would know so much more about this than I would. When they reached the South Pole, they could not stay. You know, they had been out here freezing to death, about 80 below, for 130 days already.

When they got to the South Pole, this was the first warm enclosed building they had seen, at Scott-Amundsen. But because of American policy they could not stay there. They had to pitch their tents, pitch their little tents outside, and they made them stay outside because U.S. policy says that visitors cannot stay in the U.S. facility.

The CHAIRMAN. And who down there enforces that now? Come on.

Senator DURENBERGER. Well, I wonder. Maybe we can ask them tonight.

But anyway, it was very interesting to see how the Soviets were committed to make this endeavor a success and how rigid the United States is in its, unless it was paid for by the government, we want to keep our hands off of these efforts by people to do what most no one else has the nerve to do.

The CHAIRMAN. Senator Gore and I were down there the year before last, and the Soviets worked very closely with us, the New Zealanders, and people from all the countries. In fact, they visit each other and, when the weather gets bad they get trapped and have to stay with each other.

I mean, that is a good little story, but it symbolizes a big thing. It is a rugged, beautiful place, where people from many countries operate. In fact, get this month's National Geographic and you can see the entire Antarctic in the most beautiful picture display I have ever seen.

Scott headed out, as you know, back in 1911, got there right in behind Amundsen. He tried to leave his food at places along his route. Amundsen had eaten his dogs, half of them, in order to survive to get back and report it. Scott thought he would leave food along the way and missed it by five miles.

So back at his cabin, untouched since 1911 up to today, you can see the sacks and the bearskins where they were staying, the biscuits on the table, the newspapers they were reading, and the medications that they all had ready, and a couple of dogs left behind with their collars, just there frozen, untouched for 80 years.

It is a very dramatic thing. But it is a wonderful cooperative spirit actually at the Pole and in Antarctica. They all work together and visit, and sometimes they have to do extraordinary things. One year the Soviet doctor himself got appendicitis, so he had a

friend hold a mirror as he took out his own appendix, got it open, said move the mirror around and everything else, took out his appendix, sewed himself back up. That is the only way he was going to survive, and did survive.

So you find some very, very interesting things—it is most fascinating. Mr. Bloch of the National Science Foundation was with us at the time. You and I could go all morning on the Antarctic. And I will try to get by there at 5:30.

Senator DURENBERGER. 5:30 in the LBJ Room on the second floor, or from 6:00 to 8:00 in 385 of the Russell Building.

The CHAIRMAN. Very good. Thank you very much.

Senator DURENBERGER. Thank you very much.

The CHAIRMAN. I would be delighted to yield, unless Senator Bentsen has a question of Senator Durenberger. I yield to Senator Bentsen.

Senator BENTSEN. I have several, but I will talk to him later.

The CHAIRMAN. He sounds like a Chairman of Finance, does he not?

Senator DURENBERGER. He does.

Thank you very much.

The CHAIRMAN. Thank you.

Senator, did you have an opening statement?

Senator BENTSEN. No, I have no opening statement. I just have some questions.

The CHAIRMAN. I have an opening statement from Senator Pressler and a statement from Congressman Sikorski that I will include in the record.

[The statements, biographical sketch, and questions and answers follow:]

OPENING STATEMENT BY SENATOR PRESSLER

Thank you, Mr. Chairman, for scheduling this hearing so expeditiously. I would like to welcome Dr. White, and congratulate him on his nomination as the Under Secretary of Commerce for Technology. I look forward to working with him in his new position.

Congress established a Technology Administration at the Department of Commerce in 1988 to oversee and coordinate the Department's various technology extension and outreach programs, such as the National Institute of Standards and Technology (NIST), the Office of Technology Policy, and the National Technical Information Service. Most of these programs are relatively small, but they are very important to industry, and have the potential to be especially beneficial to our small businesses. The programs provide U.S. industry with access to the critical measurement standards they need to develop new products; they assist in the development of new basic tecnologies and manufacturing techniques; and they provide information on state and local technology programs, small business innovation, and Japanese technical literature.

America's competitive position has slipped alarmingly in the past decade. We are consistently being challenged by foreign countries, both at home and in overseas markets. Technology policy provides a means to turn that around. It can increase our productivity and improve the quality and efficiency of our manufacturing. Dr. White, with his background in industrial research and knowledge of the computer industry, will be a valuable asset to the Administration as it formulates a technology policy to meet these challenges.

Statement of Congressman Gerry Sikorski
Senate Commerce, Science, and Transportation Committee
Monday March 26, 1990 10:00 a.m.

I commend Senator Hollings, Chairman of the Senate Commerce, Science, and Transportation Committee for holding hearings expeditiously on the nomination of Robert M. White to be the Undersecretary of Commerce for Technology.

I urge the Committee to support the nomination of Robert White to the position of the Undersecretary of Commerce for Technology. Robert White's qualifications for this position speak for themselves and his nomination merits the Committee's approval.

In today's climate of intense global competition and a growing international economy, the need for the development of domestic advanced technology becomes all the more important. If America is to continue being a world leader, the innovation and creativity that has lead to the development of high-tech products must remain a high priority. The position of Undersecretary of Commerce for Technology plays an important role in establishing high science and technology standards that drive our economy and competitiveness.

Robert White's qualifications meet the requirements of the newly created position. Bob's twenty years in research and development as a scientist, educator, and executive gives him an intimate knowledge of research consortia and technology transfer, as well as strong ties to academia. He has served as a professor of physics at Stanford and as Vice President at Control Data Corporation where he was responsible for transfer of technology from Microelectronics and Computer Technology Corporation (MCC).

Equally as important as Bob's present occupational experience as Director of Advanced Computing Technology at MCC is the fact that Bob has served on the State of Minnesota's Committee on Science and Technology Research and Development for the last three years. The Committee serves as an advisory board for the legislature and the Governor on all science and technology proposals. Bob has also received one of the greatest honors in his field -- election to the National Academy of Engineering.

As a member of the Commerce, Consumer Protection, and Competitiveness Subcommittee of the House Energy and Commerce Committee, I recognize the needs of having people like Robert White working to improve American productivity, competitiveness, and innovation. Robert White can push America forward in the field of technology to improve the well-being of all citizens. Again, I urge you to support the nomination of Robert White for the Undersecretary of Commerce for Technology.

[illegible]

United States Senate

COMMITTEE ON COMMERCE SCIENCE
AND TRANSPORTATION

WASHINGTON DC 20510-8125

STATEMENT FOR COMPLETION BY PRESIDENTIAL NOMINEES

(If more space is needed, please use attached REMARKS sheet)

I. BIOGRAPHICAL DATA

1. Name: White (Last) Robert (First) Marshall (Other)

Address: 6801 Iroquois Circle
Edina, MN 55435 (Residence)

Microelectronics & Computer Tech. Corp
3500 West Balcones Ctr. Drive
Austin, Texas 78759-6509

2. Position to which nominated: Under Secretary of Commerce — Date of nomination:

3. Date of birth: Oct. 2, 1938 (month) (day) (year) — Place of birth: Reading, PA

4. Marital status: Married — Full name of Spouse: Sara Tolles White

5. Names and ages of children: Victoria White, age 20
Jonathan White, age 13

6. Education:

Institution	Dates attended	Degrees received	Dates of degrees
MIT	9/56	6/60	B.S. 6/60
Stanford	9/60	12/64	Ph.D. 1/65

7. Employment record — List all positions held since college, including the title or description of job, name of employer, location of work, and dates of inclusive employment.

From	To	Name of employer	Address	Type of work
1/65	9/66	National Science Foundation, Washington, DC		Research Fellowship Univ. Cal., Berkeley
1/66	9/66	University of California, Berkeley, CA		Research
9/66	9/71	Stanford University	Stanford, CA	Assistant Professor
9/71	9/72	National Science Foundation, Washington, DC		Research Fellowship Cambridge, ENGLAND
9/72	10/84	Xerox Corp.		Research, Strategic Plan.
10/84	11/89	Control Data Corp.		VP, Chief Technical Off.
11/89	Present	MCC		VP, Research

8. Government experience — List any experience in or direct association with Federal, State, or local governments, including any advisory, consultative, honorary or other part-time service or positions.

Member, National Academy of Engineering

Member, National Materials Advisory Board

Member, Minnesota State Committee on Sciences and Technology

9. Political affiliations activities: — List all memberships and offices held in or financial contributions and services rendered to all political parties or election committees during the last 10 years.

Donation of $100. to campaign of Buddy MacKay (May, 1988)

10 Memberships — List all memberships and offices held in professional, fraternal, scholarly, civic, charitable, and other organizations.

International Union of Pure and Applied Physics, Vice-Chairman, Commission on Magnetism

American Physical Society, Chairman, George Pake Prize Committee

IEEE

Chairman, 1991 Joint MMM-Intermag Conference

Program Chairman, 1985 International Conference on Magnetism

AAAS

NRC Committee on Materials Science and Engineering

National Steering Committee for an Advanced Steady State Neutron Source (See attached)

11 Honors and awards — List all scholarships, fellowships, honorary degrees, honorary society memberships, and any other special recognitions for outstanding service or achievement.

Bell Memorial Scholarship, MIT

National Science Foundation Postdoctoral Fellowship

National Science Foundation Senior Postdoctoral Fellowship

Distinguished Lecturer, Magnetics Society

Fellow, Institute of Electrical and Electronic Engineers

Fellow, American Physical Society

Member, National Academy of Engineering

Alexander von Humboldt Prize (West Germany)

12 Published writings — List the titles, publishers, and dates of books, articles, reports, or other published materials you have written.

See attached

10. Continued

State of Minnesota Committee on Science and Technology Research and Development (1987–90) (Appointed by Governor Rudy Perpich)

Board of Advisors, Institute of Technology, University of Minnesota

College of Engineering Advisory Board, University of Illinois

Computer Science Advisory Board, University of Wisconsin, River Falls

Advisory Council, Cornell University, School of Electrical Engineering

Science Advisory Council, Mills College (1976–1981)

R&D 2000 Committee

Advisory Panel, 1989 Conference Board R&D Conference

Science and Technology Committee of the American Electronics Association

PREHEARING QUESTIONS OF THE CHAIRMAN AND THE ANSWERS

1. If confirmed as Under Secretary of Commerce for Technology, what will be your principal activities and priorities?

Right now my priorities fall into three broad categories.

The first I'll call "client-oriented" - that is, working with the private sector to make sure it's needs are understood; to identify and remove roadblocks that hinder the development and commercialization of technology; and to encourage firms to look beyond their own resources for their technology needs - to cooperative arrangements with other firms, to the federal government's own laboratory infrastructure, to foreign sources.

The second I'll call "colleague-oriented" - that is, working with federal policymakers responsible for health, national security, the environment, trade, agriculture, etc., to ensure that they factor into their decisionmaking how their policies, activities and programs affect the climate for technological growth in this country. Technology is not something that exists apart from these issues - they all affect each other.

The third I'll call "managerial" - that is, working with the heads of the three main components of the Technology Administration to improve the programs for which we are responsible, to make those programs more responsive to the needs of their intended beneficiaries, and to determine how and whether they can work off each other and complement each other.

2. How many staff people will you have in your immediate Under Secretary's office, and what will be their duties and activities?

I understand that the current budget allows $1 million and fourteen positions for the Office of the Under Secretary. I will have to wait until I am aboard and have fully assessed the situation before commenting further or recommending changes. Like any manager, I hope I can get by with an organization that is not top-heavy with unnecessary support staff. I'm interested in people who can run the programs and develop appropriate policies. However, I also recognize that we do need our share of specialists to take care of budget, procurement, personnel, legal, public affairs issues, and the like. Once I have had a chance to assess the situation, I will be pleased to discuss the matter with the Committee if major changes are needed.

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3. The 1988 law which created the Under Secretary's post gives the Under Secretary two main responsibilities: (1) to "manage the Technology Administration and supervise its agencies, programs, and activities;" and (2) to "conduct technology policy analyses to improve United States industrial productivity, technology, and innovation, and cooperate with United States industry in the improvement of its productivity, technology, and ability to compete successfully in world markets." I want to ask you about this second responsibility. First, if confirmed, what policy reviews and other actions will you take to help improve U.S. industrial productivity and innovation? Will you play a role in advising the Secretary and the President on matters of technology, and will you participate in such interagency groups as the Economic Policy Council and the Federal Coordinating Council for Science, Engineering, and Technology? Second, how will you work with U.S. industry to improve American competitiveness? Will you, for example, meet regularly with industrial leaders and work with them, under Secretary Mosbacher's supervision, to develop new technology strategies?

I expect to take a very active role in advising Secretary Mosbacher and Deputy Secretary Murrin on technology competitiveness. I particularly look forward to working with Tom on the EPC's Working Group on Research, Development, Technology and Innovation, which Commerce chairs.

I agree that we have to have a strong policy development capability within TA and that we have to make sure that industry has our ear and we have theirs. I'm very enthusiastic about the possibility of establishing a new advisory board reporting to Secretary Mosbacher that can help us make sure the relevant information flows back and forth.

I am a bit reluctant to identify my policy analysis priorities until I've had a chance to meet with the staff and assess our capabilities and resources. But a number of candidates are at the top of any list: how to get agreement on the nature of the technology challenges facing us and how to arrive at consensus on what needs to be

done; encouraging the adoption of advanced manufacturing and dedication to quality; encouraging the formation of strategic partnerships within and across industrial lines; getting maximum commercial benefit from federally funded R&D; encouraging industry to take the long view; and ensuring that there is a reasonable quid pro quo in our S&T relations with other countries. I also want to make sure we fully understand how the Japanese manage their technology so well.

4. The fiscal year (FY) 1990 appropriations act for the Department of Commerce (DOC) contains funds for three new programs at the National Institute of Standards and Technology (NIST). The act contains $4.5 million to start additional Manufacturing Technology Centers, $1.3 million to start the new State Technology Extension Program, and $10 million to establish the new Advanced Technology Program (ATP). So far, however, DOC has not issued any formal requests for proposals for these three programs. When will the three competitions be formally announced and proposals invited, what is the schedule for reviewing proposals and selecting awardees, and are you confident that funds for the three programs will be obligated by the end of this fiscal year?

The Department has established an ambitious schedule to assure that the first awards under each of these new programs are made by the end of this year. Secretary Mosbacher, Deputy Secretary Murrin, and I are all firmly committed to this goal. I expect that the draft ATP procedures will shortly be cleared for publication in the Federal Register for a 30-day comment period at the end of which a final rule will be issued and proposals invited. The program procedures for the Manufacturing Technology Centers Program will follow within a relatively short time, again as a request for public comment in the Federal Register, followed by a final rule and invitation for proposals. The Rockefeller/Boehlert Program, funded only for the current year, will not require a rule-making procedure. As soon as final clearances are completed, a request for proposals will be issued.

5. If confirmed, what are your plans regarding the programs and activities of the Office of Technology Policy (OTP)? In particular, what objectives will you set for the Japanese Technical Literature Program, the metric program, technology management activities under the Federal Technology Transfer Act of 1986, and the Clearinghouse on State and Local Initiatives on Productivity, Technology, and Innovation?

I should make something clear from the outset: I don't believe in micromanagement. Each of those programs is the direct responsibility of the Assistant Secretary for Technology Policy and I will expect that officer to run them efficiently and effectively. However, each of the ones you mentioned is clearly very important and I do intend to take an active interest in how well they are serving their purposes:

- As to the Japanese Technical Literature Program, my main interest is making sure that what we are collecting is indeed what businesses need and that we are getting it out to them.

- For metrication, I naturally want to satisfy myself that we have been doing all we should have been to meet the goal of converting federal agencies to the metric system by 1992. I also want to make sure that we are getting the word out to business about the importance of conversion, particularly with the impending arrival of EC 92.

- The Federal Technology Transfer Act of 1986 is still new, but the first returns are very promising - I think it will do much to break down the walls that have often precluded effective collaboration between federal and private sector researchers. We need to get the word out to industry about this powerful new tool.

- As to the Clearinghouse, there is no question that the states are doing some exciting new things to promote the development and transfer of technology. They need good, solid information on who is doing what, where they can go for information, what works and what doesn't. I want the Clearinghouse to provide them with that kind of useful information. I understand that a plan has been developed and is now under review within the Department.

6. The National Technical Information Act of 1988 (Title IIB of P.L. 100-519) allowed the National Technical Information Service (NIST) to retain and, subject to appropriations acts, utilize its net revenues to implement modernization plans. Has the Bush Administration in fact requested appropriations language that will allow NTIS to retain $500,000 in revenues in FY 1991 for modernization? How would the funds be used? What are your plans for the long-term modernization of NTIS?

The President's budget for FY 91 contains language that would allow $500,000 to be credited to NTIS's account for modernization, including operating expenses. It will be used to fund implementation of an optical disk order processing system which will make customer orders available for processing 3-5 days faster than is now the case and do so with greater cost-effectiveness. Eventually, we hope this will evolve into an electronic document system that will allow mass storage of full-text documents and enable us to transmit documents electronically.

Our long-term strategy for NTIS is to transform it into an electronic organization. In addition to the optical system, other initiatives include: a detailed modernization study, an integrated financial management system, a new input processing system, use of computer-assisted translation, mounting electronic bulletin boards, use of bar coding technology to improve inventory and order handling, increased office automation, and use of computer-assisted indexing.

7. A May 1989 report by the Department of Defense (DOD) stated that Japan is significantly ahead of the United States in six critical technologies -- microelectronic circuits, gallium arsenide, robotics, optics, superconductivity, and biotechnology processing and materials. A 1988 white paper by Japan's Ministry of International Trade and Industry (MITI) found Japan to have superior "technology development capability" in ten critical technologies; Japan was equal to the United States in five technologies and lagged behind the U.S. in only one area. Do you have any reason to disagree with these assessments of America's position relative to Japan? Do you find these developments troubling and dangerous for the economic and military security of the United States? Finally, as an experienced scientist what steps do you believe must be taken, by both government and industry, to restore U.S. technological leadership?

I suppose we will never have complete agreement among experts, but the various assessments showing substantial Japanese advances in a wide range of technologies are basically accurate. What's more, we should not focus only on Japan. With the emerging unification of the European Economic Community, the level of technology-based competition will become even more intense.

But I do not think the threat is that somebody leads us in this or that identifiable technology. In a global economy such as ours where so many nations have made substantial investments in technology, no one nation can expect to be dominant across the board. The danger is that the U.S. position is declining across a range of technologies - especially those that will underpin much of the world's economic growth over the next decades.

The implications are clear - at least to me: We should stop trying to analyze things in terms of "picking winners or losers." It is an unproductive debate. Government and industry have to work together to define their respective roles with a view to developing a broad, deep, diversified, constantly evolving technology base that is

second to none among the industrial nations of the world. A good analogy is to the mutual fund manager: he's not looking only for the high-fliers - i.e., trying to pick only winners; rather, he's hoping to achieve high and stable long-term growth by diversifying risk.

8. Do you believe it is important for the United States to have a strong civilian technology base, especially in manufacturing and key emerging technologies? If so, what do you believe is the appropriate role of the Federal government in general, and the Commerce Department in particular, in helping American industry to develop and maintain that civilian technology base?

Of course we should maintain a strong civilian technology base, provided we understand that "strong" does not just mean strong in a certain area or areas. As I indicated in the previous question, it implies diversification across a range of technologies. There are a number of major, emerging areas in which we have to be competitive if we are going to have balanced and stable economic growth and a steadily increasing standard of living: advanced materials, advanced electronic and information systems, advanced manufacturing, and life sciences.

Bluntly, the challenge of foreign competition is increasing at a time when our ability to respond to it may be weaker than we might care to admit. High capital costs and other pressures are making it harder for firms to do just what they have to do the most: make long-term investments. Foreign firms find their governments willing to work with them not only in developing basic science, but in the early stages of technology that derives from basic science.

What can Government do? The President made it pretty clear in his recent speech to the American Electronics Association: "This Administration is committed to working with industry in the critical pre-competitive development stage where the basic discoveries are converted into generic technologies that support our economic competitiveness" and is "committed to a comprehensive program of both immediate

and long-term competitive strategies for the future."

The precise contours of this bold declaration have yet to be worked out. But this is an exciting new development for federal policymakers nonetheless. That's what Secretary Mosbacher and Deputy Secretary Murrin have pushed for. That's what I want as well.

9. In November of last year, the National Advisory Committee on Semiconductors issued a detailed and thoughtful report on the steps needed to restore U.S. competitiveness in this critical sector. Do you agree with the Advisory Committee that the crisis in the U.S. semiconductor industry is deep and serious and that government actions to create a better business environment are necessary if the U.S. semiconductor and semiconductor equipment industries are to survive? Why has the Administration not given a formal, comprehensive response to the recommendations? Is Congress to infer that the Administration does not care whether the semiconductor and semiconductor equipment industries survive of not?

I do not think there is any question that the Administration cares about the competitive status of the U.S. semiconductor industry. I was very encouraged by the President's own words. In the same speech I mentioned in the preceding question he also said that the Administration intends to work "closely, constantly and consistently - to see that American electronics and technologies regain and retain a preeminent position in world markets." I am very pleased that the Government is continuing its commitment to SEMATECH. That is a major strategic weapon in the industry's effort to re-establish its competitiveness.

But notice I said "industry's effort to re-establish its competitiveness." Government may have a role to play, but we must remember also that the industry will ultimately determine its own fate by how it responds to the competitive challenge. I understand that semiconductor firms are indeed increasing their R&D spending, forming alliances with firms all over the world aimed at helping them advance, acquire, and efficiently utilize relevant technology. That's a good sign.

As to the NAC Report itself, its scope and magnitude do not permit a quick response. I want to discuss its conclusions and recommendations in detail with my staff and then contribute to a broader dialogue within the Administration over appropriate responses.

10. A bill now pending before the Commerce Committee, S.1067, would formally institutionalize and authorize the high-performance computing initiative which the Office of Science and Technology Policy (OSTP) developed in response to a report requirement written by our Committee. As someone who has spent much of his professional life in the computer industry, do you agree that the OSTP computer initiative is important and that S. 1067 should be enacted?

OSTP's High Performance Computing Initiative Report and Sen. Gore's bill both have the same goal: making high performance computing available to America's R&D community and its computer industry. The Administration has endorsed the OSTP concepts, which is also the basis of S. 1067. Beyond that, I would have to defer to OSTP for a fuller discussion as to the extent to which the two coincide or diverge.

ll. There is great interest today in creating new joint research and development ventures ("consortia"). You have worked closely with one of the pioneering consortia, the Microelectronics and Computer Technology Corporation (MCC). In your view, are consortia an appropriate and effective way for companies to share costs and pool information to develop generic, pre-competitive technologies that will benefit all participating firms?

Yes, if the consortium has industry support, is structured so as to provide incentives for collaboration, and a means exists for the resulting technology to be transferred back to the sponsoring organizations. We at Control Data, for example, were particularly interested in making sure that MCC research found its way into our product lines. By last year we had found that we had indeed recovered our total investment.

In general, I believe that the scale of investment needed to develop and commercialize the exciting new technologies of the future exceeds the capabilities of individual firms, and perhaps even of individual industries. Consortia and strategic partnership arrangements could make the difference. We need horizontal ones, such as MCC, as well as vertical ones, such as SEMATECH.

I hope my office will be able to encourage the formation of some of these, or at least remove some obstacles. Government did that when it secured enactment of the National Cooperative Research Act of 1984. We now have more than 160 registered ventures. I was delighted to learn that the Administration wants to extend the scope of that law to encourage joint production ventures.

12. During the Reagan years, officials at the Department of Defense (DOD) stressed that a strong overall national industrial base is necessary if the military is to have American sources of advanced technology. As a result, they emphasized the importance of dual-use technology and the research that creates that technology. This policy placed great emphasis on the research programs of the Defense Advanced Research Projects Agency (DARPA). Do you agree that it is in the interest of both DOD and the economy as a whole for DARPA to continue to support research in dual-use technologies, particularly those in important areas such as electronics and advanced materials? What do you think is the appropriate balance between DOD and civilian research agencies, such as NIST, in helping build the nation's overall technology base?

I certainly hope that DARPA will be able to continue its excellent record of support for research in dual-use technologies.

However, as recent House hearings underscored, there are many diverse pressures on DARPA stemming from such factors as changes in Eastern Europe, the prospect of decline in the Defense budget, the increasingly sophisticated weaponry in Third World countries, the emerging DoD role in counter-narcotics, new responsibilities to monitor arms control treaties, and the increasing globalization of technology.

To cope with these factors, I understand that DARPA's strategic directions and long range plans call for the integration of its investments in military systems, high technology, and manufacturing technology into a coherent whole. Naturally, I hope that this policy will serve both defense and civilian technological needs. I look forward to working with DARPA to identify opportunities for the commercialization of its technology. In parallel, the Technology Administration will pursue technologies of direct relevance to the commercial sector.

13. In February, the Commerce Department's General Counsel sent a letter to Congress commenting on pending authorization legislation for DOC technology programs. One part of the letter deals with the question of whether and when foreign-owned companies should be allowed to participate in government-assisted research consortia. While Congress and DOD have agreed that no foreign firms should participate in SEMATECH, the General Counsel argues that it would be "discriminatory" to bar foreign companies from any Commerce Department-assisted research projects. Since the whole purpose of domestic programs is to "discriminate" in favor of U.S. citizens, I have written Secretary Mosbacher to ask for a clarification of the Administration's position. I have two questions. First, what is your personal position on this issue? Do you think that taxpayers' money should be given to foreign firms without conditions or reciprocity, or do you favor the approach taken in S. 1191? Second, when do you expect that the Secretary will be able to respond to my letter asking for a clarification of Administration policy?

Everyone at Commerce, including the General Counsel, believes that it is crucial to assure that U.S. business is the principal beneficiary of the results of the research funded by the Advanced Technology Program, which was the program at issue in S. 1191. I understand that the Department is preparing a response to your letter.

Speaking from my own perspective, there is no question that Federal programs ought to be designed so that U.S. taxpayers are the principal beneficiaries, and that is certainly true for the ATP. I will work within the limits of the law to make sure this happens. However, I also believe that to answer the question of which firms should participate in a particular research effort, we should look to the partners themselves for guidance.

There may well be instances in which the participation of a foreign firm in an ATP funded cooperative R&D venture may be more beneficial to the U.S. economy than its exclusion. The real test is always what the parties can bring to the project that makes them a desirable partner. In most cases, the partners themselves are better equipped to make this judgment than we are. In any case, the ATP should be managed in a flexible way toward the goal of maximizing U.S. economic growth.

14. Recently, some Members of Congress have proposed the creation of an Advanced Civilian Technology Agency (ACTA) in DOC. Sometimes this proposed new agency is referred to as a "civilian DARPA." Do you believe that a new entity is needed? Or do you believe that the existing authorities and organization at the Commerce Department are sufficient and appropriate?

The fact that we created a DARPA does not mean we should create a civilian counterpart. The reason we created a DARPA was to make sure we had a means of responding when the defense establishment identified specific defense-related needs for technologies that firms might not have found viable or cost effective to produce under traditional market principles. DARPA was dealing with a fairly well defined set of needs and suppliers.

The DARPA experience cannot be easily shifted to the civilian side. In my view, our attention should be directed toward making the new Advanced Technology Program work. It is clearly concentrated beyond basic research but at the precompetitive end of the R&D spectrum and should give us valuable insights into the dynamics of consortia formation and management of resulting technology. It is a new and promising area of federal involvement and we should proceed carefully if we want to see the concept develop and flower.

To establish a civilian DARPA at this stage, however, would be tantamount to trying to run before we have learned to walk.

15. Increasingly, both environmentalists and businessmen see advanced technology as an important factor which can help reduce our nation's pollution problems. What role do you think Federal R&D programs can play in helping to develop innovative technologies that can aid both economic growth and protection of the environment? Do you believe that the Department's technology programs can play a constructive role in this area?

Like so many Americans, I too am concerned about global environmental issues, particularly global climate change, the depletion of the ozone layer, and the possibility that human activities may be having adverse impacts on the global environment. The Government simply must be willing to make the necessary investments to understand these issue - i.e., to resolve scientific uncertainties - so we can figure out what to do next. That involves generic research that we cannot expect business to underwrite. I understand the President's budget calls for a 57% increase in global change research.

I would expect the Technology Administration to take an active interest in this vital undertaking in at least three ways.

First, I will expect our NIST scientists to work closely with NOAA, NASA, and other agencies to help us develop the science base we need to understand these environmental issues.

Second, I will expect them to continue to work closely with industry on the advanced technologies which are the keys to solving the problem, such as NIST's work to develop the data and measurement support required to facilitate the development of new CFC alternatives and equipment that can use them or its measurement work aimed at supporting new technologies that can eliminate waste streams from the

manufacturing process.

Third, I expect our technology transfer specialists to work with all agencies of government to help them take advantage of the tools available to them to encourage the development of new cooperative R&D relationships with the private sector, state and local governments, and academia, and to help them commercialize any environmentally-related technology that results from federal funding.

16. In 1986, Congress and the Reagan Administration worked together to enact the Federal Technology Transfer Act, a statute which permits and allows Federal laboratories to enter into cooperative research agreements with industry, the states, universities, and others. Last year, new legislation extended this authority to Department of Energy (DOE) weapons laboratories, one set of federal facilities not originally covered by the 1986 Act. In your judgment, how has this Act worked in practice? Do you believe that Federal laboratories have begun to transfer unclassified federal technology to the private sector? Do you think that the laboratories can make important contributions to improving American industrial competitiveness?

The Act is working very well. As Secretary Mosbacher's recent report to Congress indicated, there are hundreds of new cooperative arrangements and the pace is accelerating, the number of new inventions being reported by federal scientists is up, and royalties are starting to increase.

What is really exciting is that the federal and private sector research establishments are starting to look to each other as valuable partners, something which has tremendous ramifications for the future. For too many years the federal scientists somehow thought that "commercial" activity was vaguely improper and the private establishment wondered what went on in those federal laboratories. Not all of them had NIST's rich history of public-private cooperation. We are starting to see some "culture" changes which I regard as very healthy.

We need to get the word out to industry about this valuable resource that federal and national laboratories represent.

17. In 1988, President Reagan and the Prime Minister of Japan signed a new United States-Japan Science and Technology Agreement. The new agreement established a comprehensive set of guidelines for both cooperative research projects between the two countries and other forms of cooperation, including exchange programs. What role is the Technology Administration now playing in Federal decisions regarding possible projects under this new agreement? What priorities do you believe the Federal government should stress in its proposals to the Japanese, and what forms of U.S.-Japanese cooperation do you think would be in the best interests of the United States?

Every part of the Technology Administration is actively involved in initiatives to improve U.S.-Japan science and technology relationships:

- TA is an active participant in the Task Force on Access to Laboratory Facilities, which is concerned with opening Japanese national research projects to U.S. researchers on a reciprocal basis. The Assistant Secretary for Technology Policy is working with U.S. industry to develop information about leading edge research that is being conducted with Japanese Government funding and industry's access to it.

- Last year the Technology Administration, in collaboration with the Science and Technology Office of the U.S. Embassy in Tokyo, sponsored the second of a series of in-country studies aimed at identifying problems that might be encountered by a U.S. researcher seeking specific kinds of Japanese technical documentation.

- NTIS co-chairs the Task Force on Access to Scientific and Technical Information which is organizing a study team to investigate Japanese-to-English

computer translation and is exploring with Japanese officials the possibility of establishing a copyright clearance center in Japan.

- NIST monitors technological developments and exchanges information with Japan as part of its programs to help U.S. industry. It has sent several staff for extended stays in Japanese laboratories and is currently organizing a study team to go to Japan to assess state-of-the art in thin diamond films.

- The Japanese Technical Literature Program strives to identify domestic sources of scientific and technical information from and about Japan and published an annual "Directory of Japanese Technical Resources in the United States." Our goal is to improve U.S. business and industry use of this information.

Our highest priority under the U.S.-Japan Agreement is to ensure that U.S. industrial researchers have access to research activities undertaken with government funds that is as good as their access to ours, or that the relationship is at least roughly symmetrical. Other important priorities include ensuring the free flow of information and fast and accurate translation of that information into English.

18. Many of us in Congress now find that in order to set science and technology policies for our country, we must better understand what programs are being undertaken in other major countries, including Japan and the members of the European Community. This has placed increasing importance on programs which monitor and analyze foreign technological developments. Current programs in this area include the JTECH Program, which is overseen by NSF, and DOC's Japanese Technical Literature Program. Many other Federal agencies also collect information on scientific and technological developments abroad. In your judgment, are current Federal efforts to monitor and understand foreign technological developments sufficiently coordinated and sufficiently linked to R&D policymaking? Do you expect to be active in setting Federal policy regarding technological monitoring, and, if so, what particular role do you expect to play?

Unlike other industrialized countries, the United States seems to have no coordinated and effective method for collecting, evaluating and distributing information about these important foreign developments and linking them to policymaking. As I indicated in the previous question, the Technology Administration is doing a number of very positive things, so it would not be unreasonable to see it as a natural point for undertaking this responsibility, should the Administration want to move in this direction. However, as the question recognizes, other agencies are also involved and their views would have to be known before I could advocate any such course.

19. Currently, the DOC and the Executive Branch as a whole are working with our NATO allies and Japan to review export control rules which govern the sale of high-technology products to Eastern Europe, the Soviet Union, and other communist countries. Export control policy, however, remains a difficult area, with a continuing need to balance the economic interests of our export industries with the need to keep sensitive technology out of the hands of potential adversaries. If confirmed, do you expect to play a role in DOC and Executive Branch reviews of export control policy? And, if so, what issues do you believe should be considered during this review?

The Commerce Department believes that a review of our export control policy is a priority in view of the changing events in Eastern Europe. If confirmed, I expect to work closely with the Bureau of Export Administration, which is the lead agency within Commerce for export control matters. We all agree that U.S. business must be assured a fair opportunity to compete for the emerging markets in Eastern Europe and the Soviet Union. As such, we should pare the control list to identify and control only those goods and technologies that are truly sensitive and that would have a detrimental effect on our national security if they became available to our adversaries.

The CHAIRMAN. All right, let me yield to you. Get right into it. Dr. White, in the interest of time we will ask you to forgo the usual opening statement. But your entire written statement will be included in the record.

Senator BENTSEN. Dr. White, you have been working for the last year in Austin, have you not, at MCC? What I was really interested in knowing, because I have been a supporter of that kind of effort, is what do you see as the special advantages and limitations that you have with a multi-company consortium when we are talking about high technology research?

STATEMENT OF DR. ROBERT M. WHITE

Dr. WHITE. Well, Senator, I see a number of advantages. First of all, it gives the corporations an opportunity to leverage their investments. There oftentimes are technology activities that are just too large or perhaps too long-range for any one company to support individually. And so by sharing in this way, I think they leverage their investment and they are able to accomplish what they could not otherwise do.

The other advantage that I have noticed being involved with MCC is an evolving change in corporate culture towards more willingness to work together. I see companies that in the past had never even had meetings with one another, now willing to share information and work together.

I see that this is an increasing trend, and I think that is a very strong advantage of providing this kind of activity for them to work together.

Senator BENTSEN. I have noted in some other industries, a great deal of difficulty in getting them to share research with each other and a lot of jealousy and being very provincial, I would say, as far as doing anything.

But you are beginning to see some breakthroughs in that regard, are you?

Dr. WHITE. I think you must remember we have got 200 years of history of this strong individualism, corporate individualism, that is now beginning to, I think, give way to the recognition that we have to work together in order to be competitive.

Senator BENTSEN. I know with our limitations on oil and gas production in this country and the increasing imports from other countries, I have done my best to try to get some of the oil companies to share research knowledge, and it is a tough, uphill climb. They just do not seem to want to do that.

Now, some of us are trying to strengthen the Commerce Department's role in promoting civilian research, and one of the major objectives is to create this kind of an office within the Department. What have you heard from Secretary Mosbacher or some of his people concerning any guidance they might want to give you in the directions that you should head in your office as you try to accomplish these objectives?

Dr. WHITE. I think both Secretary Mosbacher and Deputy Secretary Murrin have been very enthusiastic about the program, about the Technology Administration, and the fact that it is a new effort to focus and to bring together. In a sense, it is the only place in the

government where we have this intersection of the industrial concerns and needs, to bring them together into a focused position.

I think they are sensitive to this and I think they are very enthusiastic about moving ahead with the various programs that we have in place.

Senator BENTSEN. Well, I was looking at the United States Defense Department coming together with a report on what were the critical technologies that had to be developed for the defense of this country. I wish we had something like that for economic objectives, for the economic competitiveness.

I am totally convinced that as we look at the decade ahead that it is not going to be a concern about tanks, but real competition in the economy from some of our allies that will concern us. They are going to take us on head to head, and we have to be able to meet that kind of competition and to turn this trade deficit around.

So what do you see happening there, and do you see yourself concentrating on some particular technologies?

Dr. WHITE. The Commerce Department has put together, in fact, a list of critical technologies. That list is now with the Secretary for his review.

Senator BENTSEN. It has not been published yet, has it?

Dr. WHITE. Not yet. And I think that that list does indicate areas of commonality with other lists that the Defense Department has generated. I think it follows in the tradition of the list that was generated, I think, a few years ago by the Commerce Department.

Senator BENTSEN. I will look forward to seeing that.

No further questions.

The CHAIRMAN. Thank you very much.

I think it would be helpful, at least it would to this Senator, if we had just a brief discussion, Dr. White. Just like Alice in Wonderland told the cat, before we can decide where we are headed we have got to decide where we are. And it has been a long, hard struggle to get Commerce into commerce.

We have had and we will continue to have, of course, the budgetary or cost of capital end of it, and we are working hard now to start paying some bills and get down the cost of capital.

The Finance Committee, Senator Bentsen's endeavor and Senator Danforth's working hard with our U.S. Trade Representative on reciprocal trade agreements and the GATT, around down there in Montevideo. You call it the Uruguay Round.

And we have got the Super 301 trade process, and we have got negotiations going with Japan and what have you.

Then a third facet of all of this, of course, is within the endeavor at the Commerce Department, and that is where the struggle has been. Initiatives there have not necessarily been approved enthusiastically by any manner or means.

Senator Bill Roth from Delaware and myself worked on one issue several years ago. We could not get recognition of trade and commerce needs in our embassies. We noted that the Department of Agriculture has agricultural representatives in the particular embassies who did not report to the ambassador, he reported to the Secretary, and there was more immediacy, a greater continuity, and a better understanding and enforcement of our agricultural policies.

So we took a page from there and got President Carter to put in the requirement that our commerce attaches, following the model of agriculture attaches, in the various foreign offices would report directly to the Secretary of Commerce. So we created the U.S. and Foreign Commercial Service.

Then we worked on technology when Secretary Verity was there. We resolved our National Bureau of Standards into our National Institute of Standards and Technology. We got an Under Secretary, namely you now, to fill that particular role. We also have got an Office of Technology Policy and the National Technical Information Service.

Commerce is supposed to set policy. But all too often it is the last to get in the act. And in that light, you have come on board and we are making some progress for the first time. You have an administration request funds for all of NST's new programs had your budget approved. They would not request funds last year. Even though the Reagan Administration did approve and sign the 1988 Technology Competitiveness Act into law and also approve the creation of the position of the Under Secretary, your post, they held up the fund the first year of the Bush Administration.

Now I have talked to Mr. Darman and others in the Administration, and they are going along and with these programs. And now, your appointment is here. This year we are going to try to get into the development of new basic technology, not only the diffusion of new equipment through the manufacturing technology centers, but also the creation of new technology through what we call the Advanced Technology Program.

The Administration had a lot of misgivings about both the centers and the ATP. The idea of the centers, of course, was almost like agriculture, where some 117 years ago we created the land grant colleges, the research centers, the regional centers around at the various college campuses, the experimental stations, and the extension service.

We said, why not try that for industry? With the centers, we aimed particularly at small business. Then with the ATP we looked at industry-led consortia you and Bobby Inman created down there in Austin, Texas.

Now that we have done that, you have got to struggle to prove the worth of these new programs, and we have got to struggle together to prove the idea, the worth of the particular idea of using NIST in new ways to help American industry. And we as a nation have got to play catch-up ball and apply ourselves as quickly as we possibly can.

For example, I was talking to some leaders in your field of electronics and trying to find out where America's major opportunities are. We made some progress, with respect to high definition display technology. That is a technology where whole new types of screens could take over. There has been an good effort over at DARPA. Yet the Administration is withholding some $20 million there. We want to get that $20 million freed up so we can continue.

This flat screen technology would go into high definition television and a whole range of other commercial and military applications. The electronics folks tell us that it is really the futuristic kind of technology were we might play a little catch-up ball with

our foreign competitions and get ahead of the curve and really begin to compete for a minimal effort and a little leadership here at the Washington level.

Now you have got $10 million to spend this year for the ATP. What are you going to spend it on? Would that be a good place to go? Will you meet with those people in the electronics industry? You tell me. I do not have a case to try for an individual client here, but I have got a case to try for the country and you have got a case to try. Who do you see as the client and where do we go as you see it?

Dr. WHITE. I think with regard to the Advanced Technology Program I do not know how we will end up allocating those funds. As I said to Senator Bentsen, there is a list of critical technologies that we have identified, and I think that we will look at those.

We will look at, I think, the willingness of industry to work together in certain technical areas that they also feel are critical to their future. So I think there are a number of criteria that we will probably use as a basis for allocating that funding.

Certainly, as you point out, the high definition technology, the display part of that is just one part of this ongoing merger, I think, between the display technology, the high data rate communication technologies. There is an enormous amount of opportunity there, and I think that my guess would be that that would be certainly an area that we should certainly look at.

The CHAIRMAN. I guess my point, Dr. White, is we have got to look at it fast, if you know what I mean.

Dr. WHITE. Yes.

The CHAIRMAN. I talked to a technology group this morning at 8:00 o'clock and I said: Look, while we are meeting at 8:00 o'clock here, if it were 8:00 o'clock on Monday morning in Tokyo they would be meeting down at the Iron Building, the Ministry of International Trade and Industry. They set the policy, they coordinate the financing. And where we are wondering what to do with $10 million, they are allocating billions.

And whether or not we get into an industrial policy, you are right: cooperation is the order of the day, and the financial needs impel that kind of combined effort, both within the U.S. and across borders. Our own AT&T is into The Netherlands and down in Spain, in combined efforts.

Back in my own backyard, we have just broken ground and dedicated Nissan a new facility involving Nissan and Bosch from West Germany. And incidentally, the West Germans got 51 percent, which is unusual. But that is automotive electronic engineering systems, one of the most advanced technologies you can possibly imagine. And they are working together, so that is the order of the day in any kind of competition you are meeting for these kind of endeavors.

I guess I am trying to impart a little impatience, which is understandable because we in Congress have been trying to move the government along. I think the Senators and Congressmen are all getting to feel that the Administration is on board, and I know Secretary Mosbacher is. I know Deputy Secretary Murrin is, and I am glad to hear you are. We need to get it all working together.

If we can get us into this field, somehow begin developing the new programs, then we should not worry about money. I can get money. The rest of this crowd around here does not know how to get it. I have got all kinds of ways to get money.

Senator DANFORTH. I will talk to you right after the meeting.

The CHAIRMAN. They will finally go along. I had my colleague here help me with a value-added tax two and a half, three years ago, I guess. You can Tinker Toy around with gasoline and cigarettes and beer; that sounds like some state governor trying to make up a little shortfall.

We have got fiscal cancer. We talk at this level of new spending and, read my lips, we are against new taxes because we are against new spending. We are going to start on October the 1st, 1990, an entirely new spending program of new interest on the debt of at least $20 billion, for nothing. It could be like last year, when the interest cost jumped $27 billion. It is up to an amount listed in our budget of $241 billion. It is up, up, and away, and it goes in annual increments of $20 and $30 billion, for absolutely nothing.

The only way to excise that cancer is to pay your bills, and we need something in the order of a value-added tax in order to do it, and particularly if we do something on Social Security. And Chairman Bentsen is looking for $66 billion that will be lost if they vote for the Moynihan initiative, which they said is the sense of the Senate here by 79 votes three weeks ago. They said to use the peace dividend to get rid of the deficit and stop the thievery.

Seventy-nine Senators said let us, as Moynihan has indicated, stop the thievery. And if we are going to do that, that leaves a tremendous hole in the budget. So we really need money to get into Nicaragua and Panama and Eastern Europe and to begin to act as a government here, rather than a bunch of politicians trying to reelect each other and say how wonderful we are, read our lips.

Let me stop there and yield to my colleague. You have not had time to answer the committee's pre-hearing questions. I realize that, and I will state that for the record.

Senator DANFORTH. Thanks, Mr. Chairman.

I think that there is a very generally held view around Congress that science is important to our country and that we want to do what we can to give it a push forward. My very general question to you is, as far as government policy is concerned, what are your thoughts about the do's and don't's?

I am sure that there are some policies that we can pursue that would be very positive. There are other policies that we could pursue that would be very negative.

A lot of people have criticized industrial policy. They have said that that is government picking winners and losers. If Congress gets into that business, never underestimate the ability of Congress to pick winners in the States or in the districts of members of the Appropriations Committees.

So my general question to you is, now that you are about to assume this new responsibility, what are your initial thoughts about what we in government should be doing to encourage technology and what are the kinds of things that we should not be doing?

Dr. WHITE. Well, Senator, I think that one of the first efforts that I will undertake is to try to, I think, bring industry, American industry, into and involved with this problem. I think that they are feeling the results of the situation, but I think they have to start to play a more active role in the solution itself.

So I see this role here as a position to catalyze industry, to perhaps try to change some of its attitudes. I think we would like to try to encourage industry to take a longer term view of their investments in technology. I do not think in the past there has ever been a position like this, where industry does have a focal point and a position in the government where their needs and issues can be addressed.

I think that what this committee has done in setting up the Technology Administration is very exciting to me, because I think it does address one of the important issues and that is the area of pre-competitive technologies. I think that what we must do is try to make sure that we take the investments we have in basic science and see them quickly move to quality products.

So I think that there is this range in between development and basic science that many of the programs that the Technology Administration now is launching into to address, and I think that is the place to really focus the effort. So I think that, working with industry and trying to focus on this, what I call this technology gap area, are some of the activities that I would like to start initially.

Senator DANFORTH. Thank you, Mr. Chairman.

The CHAIRMAN. Along that line, I remember well the hullaballoo we had once. Felix Rohatyn, our friend from New York, was talking about industrial policy, and there was a sort of fever going on around the end of the seventies, early eighties, that we all had to work together.

In fact, Mr. Rohatyn came to town I think a couple of weeks ago in a talk along this same line. And that really terrorizes some in Washington, that management is going to sit down with the AFL–CIO and get the government to pay the bill under the aegis of industrial policy. That is not going to happen. We are not worried about that.

We have an industrial policy of winners, I guess, when we funded my colleague's semiconductor initiative and created Sematech. We found that semiconductors were a winner, I guess, if you want to characterize it that way. Of course it was not done officially in that light at all. It was done officially from a matter of national security, even through it was created as much for economic security as for defense.

With respect to the Supercollider, I guess we are starting with $8 billion down in Texas and that is a winner, some think. We picked a winner there with the industry, and we also say that the space program and space endeavors is another winner.

I am not worried about industrial policy. I am worried about industrial bankruptcy. It does not pay to develop and manufacture in the United States of America.

This Congress and government is going down the road of increasing our standard of living, and we all agree with it. We are going down this afternoon to try to add $21 billion onto the cost of production, through the Clean Air Act, and then we are going to run

around on the floor and in the aisles hollering "Free trade, free trade, let us not start a trade war." But we are going to try to add that $21 billion. We all agree, the President, the Congress, and everybody else, we have got to have clean air, clean water, unemployment, Social Security, minimum wage, plant closing notice, parental leave, safe working place, safe machinery. I agree with things but without some clear thinking we will put our companies at a competitive disadvantage.

The competition, on the other hand, stresses market share. And we have got in your particular area to realize that, so that in order to promote economic and military security and market share we have to form some initiative of some kind to get us moving and strong, because the scientific research is in America but the actual development and commercialization of that research all to often dies in this country.

If you were a manager, like you have been in Control Data, Xerox, the elsewhere, well, it is easier to go off into Singapore and develop this particular item, or to Thailand. I got there just a couple of years ago. I think the pay there, Senator Bentsen, was three dollars a day and four bowls of rice.

Now, that is our competition, and we need a trade policy to protect—you have got one Senator that does not mind using the word—to protect our standard of living. And it has got to be a give and take.

Please do not worry that you might with that little $10 million start some kind of industrial policy. If you can do it, we are going to make you king, I can tell you that right now. No chance of you doing that, but you might get us into the game, which we are not in right now.

Senator Bentsen, do you have some other questions?

Senator BENTSEN. No. I was just thinking about those comments about industrial policy. We get involved in it all the time. Any time we decide we are going to extend R&D, we are involved in industrial policy. Any time we tilt this country in favor of debt instead of equity, we have sure influenced industrial policy, and not for the better in that particular instance.

Thank you very much, Mr. Chairman.

The CHAIRMAN. Thank you very much.

We appreciate your appearance here this morning, Dr. White. I am going to get together with our ranking member, Senator Danforth, to see if we can get a markup scheduled next Tuesday. We hope to report you out and confirm you early next week.

Thank you very much.

Dr. WHITE. Thank you, Mr. Chairman.

[The statement follows:]

STATEMENT

OF

ROBERT M. WHITE, Ph.D.

Mr. Chairman and Members of the Committee:

It is an honor to have been nominated by President Bush for the position of Under Secretary of Commerce for Technology. I am also grateful to Secretary Mosbacher for recommending my nomination to the President, and to the Committee for scheduling this hearing so promptly. I promise I will never be critical of Congress' speed in deliberations!

Having been on one of the National Institute of Standards' assessment panels when the position of Under Secretary for Technology was created, Mr. Chairman, I can recall what a promising sign that was to the technology community. Little did I dream at that time that I would be sitting here today!

Let me highlight my qualifications for you.

I have devoted my career toward the development of science and technology. I became interested in science at an early age, and have made science and technology my life's work -- be it my studies at MIT and Stanford, or my research at the University of California, Xerox and Control Data.

While I am proud of my contributions to magnetic technologies, I do not believe that alone would qualify me for the position of Under Secretary. I know how scientists act and think in the laboratory, what motivates them, and how laboratory managers juggle responsibilities and allocate their often meager resources.

I know how short-term pressures play off against long-term needs, how technology gets transferred from the laboratory to the product line, and how decisions are made in the board rooms of our corporations.

We need to focus, not only on basic research and development, but also on applied research as well. We need to narrow what I call the "technology transfer gap", a gap which not only stifles the results of basic research, but deprives us of the opportunity to develop creative solutions at the manufacturing stage.

We need to move technology from the laboratory to the marketplace in the form of world-class products, processes and services. We have to get the message out to American industry that it is important to master all aspects of the technology development process. We need to learn the advantages of taking the long view, and of cooperation in the world's marketplace. And finally, as you have heard Secretary Mosbacher and Deputy Secretary Murrin avow so often, we simply have to retain the ability to make quality goods.

These are all things that affect America's competitiveness -- now, and in the future. And they are all challenges which face the Under Secretary for Technology, the Commerce Department and the Administration, the Congress, and the Nation as well.

I believe the Technology Administration could have an enormous impact on American competitiveness if it could just bridge the technology transfer gap. It would enable us to be quicker to market, it would enable us to design for manufacturability. This is largely a communication and coordination issue.

The different programs that are already part of the Technology Administration support this goal.

NIST has done an outstanding job of developing the metrology upon which modern industry is based, and as a national institute I see its role expanded.

NTIS, which I understand last year acquired and made available some 61,000 new government sponsored technical reports, is also an important part of the Under Secretary's technology mission.

The Office of the Assistant Secretary for Technology Policy must make certain that technology considerations are factored into all aspects of Commerce policy-making.

The Advanced Technology Program, and the Manufacturing Technology Centers program, two vital industrial outreach programs, are essential links in the technology transfer process. I know this Committee has great interest in those programs.

It is very important that government, industry, and academia work to improve the flow of knowledge, to understand one another's priorities, and move forward together.

Commerce can also play a leadership role in our technology strategy. This is especially necessary when the playing field is not level.

I mentioned the need for a long-term commitment before, and that is what a strategy would provide. I have seen many technologically-sound efforts abandoned in mid-course after major investment in order to optimize short-term or local performance. Such short-term actions have long-term consequences!

Such a strategy must be broad. It must recognize that we have a global economy; it must recognize the changing political climate; it must recognize the demands on the workforce.

I look forward, if confirmed, to working with Secretary Mosbacher, Deputy Secretary Murrin, the Congress and others to develop a technology strategy which would incorporate these factors and identify the dependencies of the parts of the technology "food chain".

Mr. Chairman, these are a few of the thoughts I have regarding the role of Under Secretary for Technology. It is a vital position, a challenging position, and one which I would be honored to fill, with the approval of the Senate.

I would be pleased to answer any questions you may have.

The CHAIRMAN. The committee will be in recess.
[Whereupon, at 10:41 a.m., the committee was adjourned.]

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